

## Research Article

Impact of Water Pollution on *Mugilidae* Fish in AlgeriaBoubekeur Racha<sup>1,2\*</sup>, Ramdane Zohir<sup>1</sup>, Hammoudi Adjmi Haeit<sup>2</sup><sup>1</sup>Laboratory of Applied Zoology and Animal Ecophysiology, Bejaia University, Algeria<sup>2</sup>Laboratory of Parasitology-Mycology, Central Army Hospital, Algiers, Algeria.

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## Abstract

The pollution of the coastline by the discharge of sewage and other detritus, particularly industrial, via the wadis has reached an alarming threshold in Algeria, 1420 blackheads in the wadis and beaches of the national territory have been recorded so far, while the operation has not yet been completed [1]. The Soummam River contains about 36% of Algeria's freshwater fish species. This ichthyofauna is threatened by various anthropogenic pressures (pollution, sand and gravel extraction, etc.) and must be protected by a conservation program [2]. Because of this great pollution of the industrial region in the area of Bejaia which discharges their waste pollutants at the level of these wadis, we noticed large losses of fish, including those of the family of *Mugilidae* which are the subject of our thesis work.

**Keywords:** Fish; Losses; *Mugilidae*; Pollution; Wadi Soummam; Waste

## Introduction

The Algerian coastline extends for almost 1620 km from the coast; the coastline is characterized by rocky coastlines, sandy shores and some lagoons. It is also characterized by the rarity of the islands while being rich in wetlands [3]. The hydrographic network located at the seaside has about 31 wadis, the most important of which are the wadis: Chelif, Soummam, El Harrach, Tafna, El Malah, El Kebir, El Hamiz and Safsaf [4]. In Algeria, in addition to the difficult climatic conditions, the continental waters are subjected to significant anthropogenic disturbances, inducing on the one hand the fragmentation of the environments and the isolation of the populations and on the other hand, changes of fish communities resulting in a loss of diversity and/or demographic imbalances [3]. The pollution of the coastline by the discharge of sewage and other detritus, particularly industrial, via the wadis has reached an alarming threshold in Algeria, 1420 blackheads in the wadis and beaches of the national territory have been recorded so

far, while the operation has not yet been completed [1]. Our research work is interested in *Mugilidae* fishes of great economic interest [5]. In Algeria the aquaculture production of *Mugilidae* begins to be of economic importance [6]. The Ichthyological settlement of Soummam is represented by 19 species in 11 families with a clear dominance of *Mugilidae* and *Cyprinidae* (8 species). Among the *Mugilidae* alone the *Mugil Cephalus* (Gharsallah and Abdaoui) goes up the river to the Sahel and Boussellam rivers to search for food [2]. Mules can be subjected to pollution and pathogenic parasite-related attacks that even cause mortality. Despite the economic importance of this group of fish, studies on their biology and parasitology are rare and very sparse. The objective of this small work is to look for a possible parasitism affecting the mules linked to this great pollution.

## Materials and Methods

We started sampling in October 2017. On our first outing to wadi Soummam in the Bejaia region, to collect samples of mules, for our biological study and parasitological of the *Mugilidae* of the Gulf of Bejaia (Figure 1).



Figure 1: Collection site and state of the scene.

We stumbled upon dead fish and completely degraded and discarded on the shores. We collected more than a dozen in hermetic bags, which were sent to the laboratory to be examined, as well as water for microscopic examinations in search of pests. Direct Observation, biometrics, determination of the species have been carried out, and dissection in search of pests. The water analysis was carried out by direct examinations under the microscope (Figure 2).



Figure 2: sample collection.

## Results and Discussion

In the laboratory, treatment of samples: all fish were polluted and completely degraded, releasing an odor. Worms were also found a sign of decay of fish. Species Identification: We have collected that *Mugil cephalus*.

After dissection, we found in all organs of the mules of organic matter and waste as well as phytoplankton (Figure 3).



Figure 3: dissection and examinations of mules.

The gills were covered with this material and waste which led to the asphyxiation of the mules. Study parasitological: Absence of pests during direct observations, because of pollution, treatment of samples: all the fish were polluted and completely degraded, releasing a smell. Worms were also found a sign of decay of fish. Parasitological analysis of water has revealed the presence

of flagellate microorganisms with mobility, as well as numerous bacteria, signs of great water pollution.

Today, many species have disappeared from the Wadi Soumam and its tributaries, the level of pollution of this river is so significant that one is more to wonder how to protect its ecosystem

or the little that survives but to look rather the best A way of preserving public health and that of animals too [7]. All the factories near wadi Soummam pour their waste, which led to the death of many species of fish [7]. With all the pollution that exists now: can we still consume fish? That is the question that arises.

According to the newspaper Eco News We report here the reports of a symposium of members of civil society in Bejaia are deeply concerned about the level of pollution of the Wadi Soummam. [8] A waterway that crosses the valley of the Soummam and which was the subject of a symposium held on 05 and 06 June last, by the association the Cultural Etoile of Akbou at the University of Bejaia. The theme chosen: “The Valley of the Soummam: heritage, threats and opportunities”. During the work, the Algerian and foreign experts, as well as the elected officials and executives of the administration, had to make a statement about the peril of the ecosystem and the pollution of this waterway on the lives of the residents.

The increase in the number of landfills near the river was particularly deplorable, with the ensuing unhealthiness and the pollution of the water table. What is a threat to the ecosystem? On the continuous pollution of Wadi-Soummam, Dr. Benhemiche of the University of Bejaia stressed “the proliferation of algae and various harmful organisms, including increased mineralization, which threatens the river and its tributaries”. He stated that the evolutionary indices, calculated from surveillance data and conducted over several months, have revealed continuous degradation. About the causes, the specialists indicated that they are due to the discharges of household and industrial waste and, incidentally, to agriculture. However, if the report is shared, the participants in this symposium, whose associative animators and students, assisted by the researchers, have committed themselves to making the fight against pollution of the Wadi-Soummam an objective to be achieved in the medium and long term and Draw up a roadmap based on the recommendations of the meeting. One thing is for sure, said Mr.

Mouloud Salhi to the Econews, president of the cultural star of Akbou, “Awareness and mobilization around the problem of the pollution of the wadi-Soummam will be our leitmotiv for the next twenty years.” [8].

## Conclusion

The *Mugilidae* harvested at the Wadi Soummam died by asphyxiation because of all its polluting substances and the waste discharged by humans. Prospects for improving the quality of life of these fish, and increasing their economic interest are considered. Sanitary measures must be put in place as soon as possible to avoid these large losses of fish and to preserve their diversities.

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